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Volume I OCTOBER, 1935 Number I

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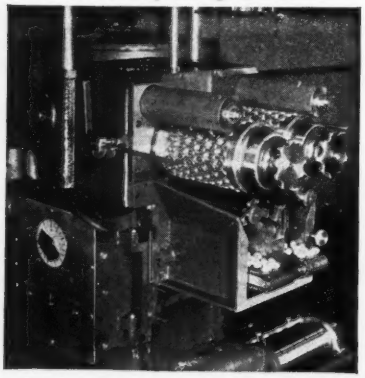
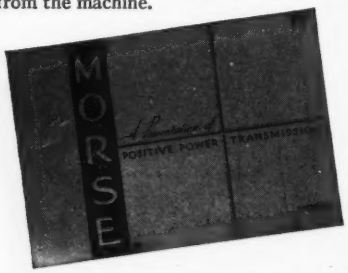
POWER TRANSMISSION NEWS

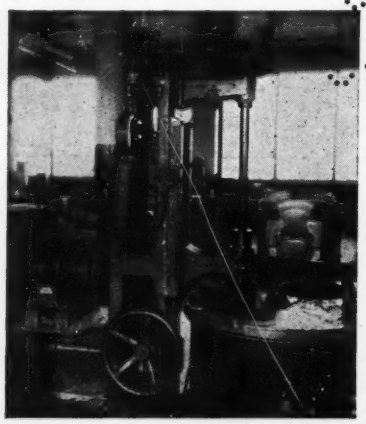
A large Metropolitan police department after exhaustive tests selected Morse Roller chains as standard motorcycle chains. Their experience shows that Morse Roller Chains stand up better and longer than any other . . . a tribute to their quality and stamina. These chains are subject to all kinds of severe operating conditions.



An interesting application of Morse 3/16″ pitch chain is illustrated in the above picture. This machine makes and fills gelatine capsules, the 3/16″ chain is used as a carrier for the capsules as they come from the machine.



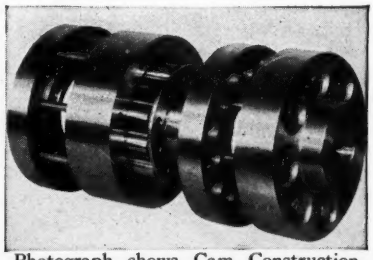
Morse has recently produced a large sized portfolio illustrating many applications of chain drives. This book is available to power transmission users. Ask the Morse Chain Company, Ithaca, New York for a copy of this new book.



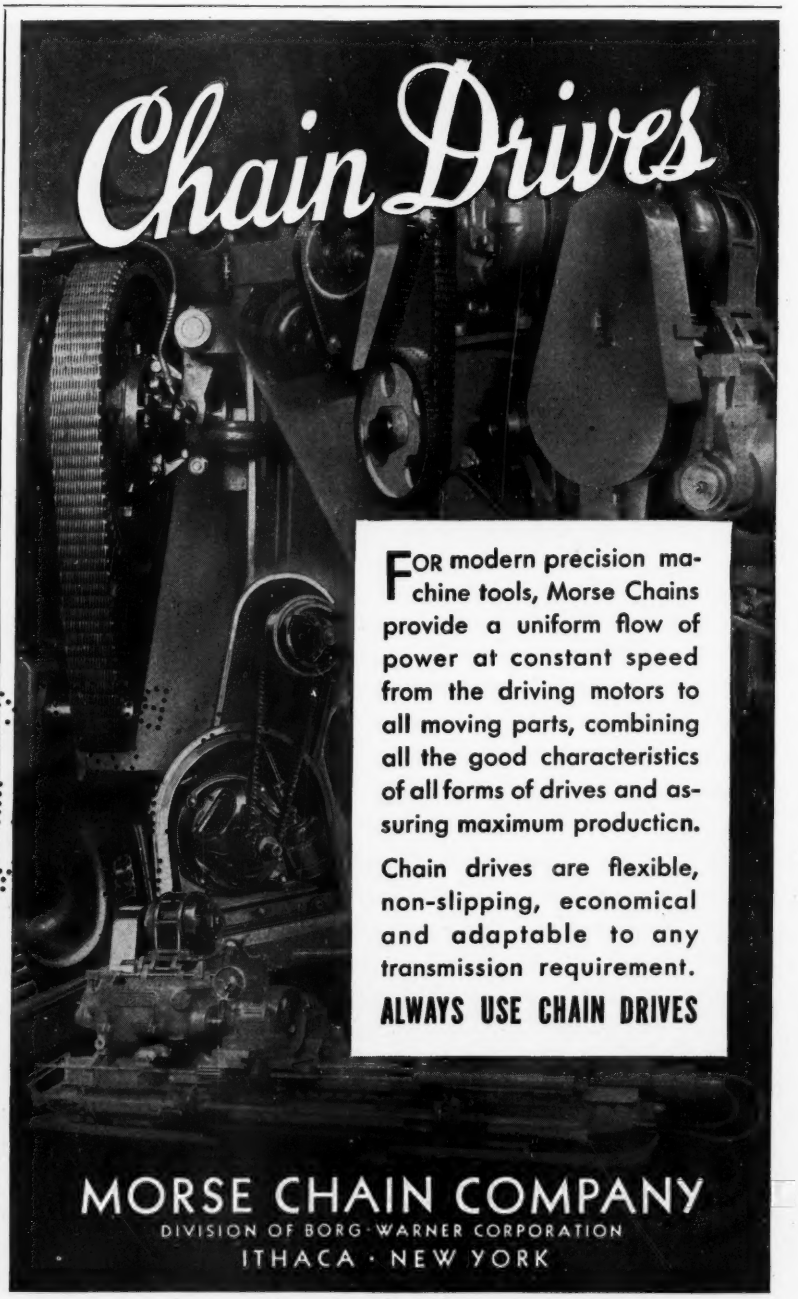
Morse roller chains are finding many varied uses in industry. Here they are driving a mixing tank in the laboratory of a large enamel and lacquer manufacturing factory. Improved design, better materials and ample provision for lubrication mean longer and more satisfactory service.

The Morse Improved Kelpo free-wheeling clutch is now offered in three different types . . Morflex . . Ratchet . . and Back Stop. This new Morse designed clutch embodies the use of solid accurately ground alloy steel cams. Each cam is independently sprung for rapid and accurate engagement. Driving pinion on all models is ball bearing mounted, self lubricated with adequate leather and felt oil seals.

The Morse Improved Kelpo line comprises eight different sizes, rated in capacity from 1/8 h.p. at 100 r.p.m. to 12 h.p. at 100 r.p.m.



Photograph shows Cam Construction, Morflex type


Chain Drives
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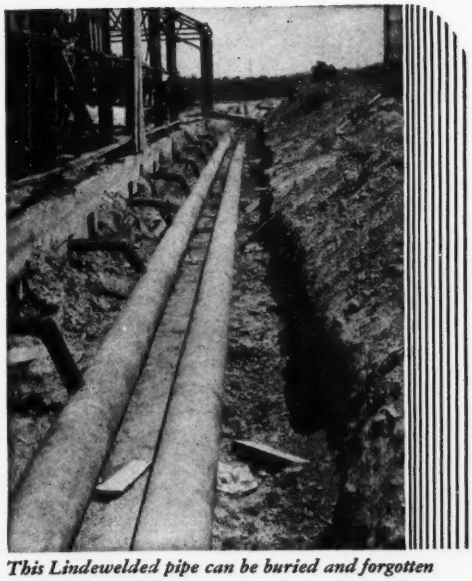
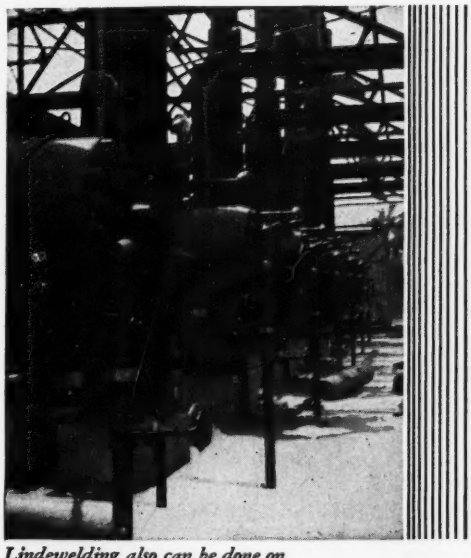
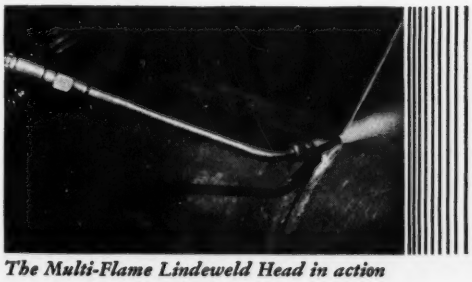


This Lindewelded pipe can be buried and forgotten



Lindewelding also can be done on vertical and overhead lines



The Multi-Flame Lindeweld Head in action

80-MILE PIPING SYSTEM FOR GASOLINE PLANT *Lindewelded**

● The construction of an East Texas gasoline plant required approximately 80 miles of welded pipe. The piping system included gathering lines from over 1000 wells. It involved straight line runs, headers, bull-plugs, bends, angles and other specials. Pipe size ranged from 3-in. to 26-in. diameter—5/32-in. to 7/16-in. wall.

The Lindeweld method of oxy-acetylene welding was selected for this project after competitive tests with other types of pipe joints. The company found Lindewelding produced dependably uniform results, cost less, and could be done in less time.

The entire system was tested under pressure. Many of the welding operators had not used Lindewelding previously. Yet the company's engineers reported they did not find a single defective weld.

Lindewelding was brought to this project as a part of Linde Process Service, which is regularly available to Linde Customers—without charge. Linde Offices will gladly give you complete details on Lindewelding. They are located in Atlanta—Baltimore, Birmingham, Boston, Buffalo, Butte—Chicago, Cleveland—Dallas, Denver, Detroit—El Paso—Houston—Indianapolis—Kansas City—Los Angeles—Memphis, Milwaukee, Minneapolis—New Orleans, New York—Philadelphia, Phoenix, Pittsburgh, Portland, Ore.—St. Louis, Salt Lake City, San Francisco, Seattle, Spokane and Tulsa. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation.

***Lindewelding is a new method of oxy-acetylene welding developed by the Linde engineering and research organizations. This method requires less oxygen, less acetylene and less welding rod. Welds can be completed in less time. Yet Lindewelding involves only a special flame adjustment and a "back-hand" technique, together with Oxweld No. 24 Lindeweld Process Welding Rod. When circumstances permit, the Multi-Flame Lindeweld Head can be used. This will further increase the speed of Lindewelding. It costs only $7.75. On pipe line construction Lindewelding is consistently saving 15 to 40 per cent in welding time, rods and gases.**

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❖ The Last Boards ❖

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TWO DOLLARS THE YEAR — VOLUME XLVIIII, NO. 9

To them we dedicate this issue as by their combined efforts The Cornell Engineer was created.

Published at the College of Engineering, Cornell University, Ithaca, N. Y., by The Cornell Engineers, Inc.

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Volume I OCTOBER, 1935 Number I

COMMENT

C. H. Leet in his article on Radio Design Trends has endeavoured to bring out the aims and accomplishments of the tube design engineer working in conjunction with the set designers to improve their product and meet public demand.

* * *

Professor Hollister discusses the new McMullen Scholarships and announces the names of the winners.

* * *

In his article on Research, Professor Diederichs lists the projects now in progress and outlines future plans.

* * *

A brief survey of the work done in each of the four branches of the R.O.T.C. at Cornell while at their summer camps is given by engineers who attended.

* * *

The Cornell Society of Engineers inaugurates their section of the magazine with a letter to the members from President Davidson.

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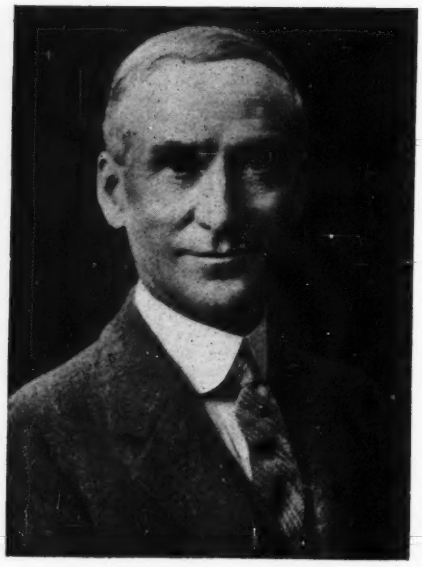
Published monthly during the college year, October to May. Subscription price $2.00, foreign $2.50 payable in advance by Post Office money order, check, etc., to THE CORNELL ENGINEER, *Lincoln Hall, Ithaca, N. Y.* Price of this issue $.25. Advertising rates on application to the Business Department. Entered as second class matter at the Post Office at Ithaca, N. Y. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 1, 1918.

NORTON PRINTING CO. ITHACA, N. Y.

From The Dean



DEXTER S. KIMBALL

Dean of the College of Engineering

Cornell University

✣

A Welcome to the Cornell Engineer

I consider the CORNELL ENGINEER a great step forward in the work of the College of Engineering and in the relations of the College to the Alumni. One naturally regrets the passing of old friends such as *The Cornell Civil Engineer* and *The Sibley Journal* both of which have added lustre to the history of engineering at Cornell. But time brings changes and new needs, and it has long recognized that a consolidated journal will not only be more economical but can be made to represent the work of the consolidated college better than the two older magazines. Here as elsewhere in union there is strength. Engineering at Cornell faces a competition that grows constantly in volume and intensity. In many instances this competition is supported by funds greatly in excess of anything we are likely to possess in the near future. So far we have succeeded in holding a place in the front rank of engineering colleges. But it will require the united efforts of trustees, faculty, and alumni to retain this place in the face of the face of the competition to which I have referred. It is hoped that the new magazine will be of interest to all alumni irrespective of the degree they may hold, and that it may be the means of creating a stronger bond between the College and the Alumni. For a strong alumni interest is essential to the growth and well being of the College.

DEXTER S. KIMBALL

THE CORNELL ENGINEER

Vol. I, October, 1935 No. 1

Modern Design Trends in Radio Receivers

By C. H. Leet, '36 E.E.

During the last five years radio set manufacturers have made so many important discoveries and developments that the set of today in no way resembles its antique brethren. This advancement has been due chiefly to severe competition among set manufacturers to improve the quality of their product and at the same time lower production costs. Their development has centered around the idea of increasing the effeciency and number of functions of each tube and the development of tubes and circuits performing entirely new functions. The introduction of the automobile radio opened a new field of experiment and research to meet the problems it brought forth. The resulting developments were reflected on the sets manufactured for permanent installation. More recently the appearance of the midget set and the ever increasing popularity of multi-wave band receivers brought new problems which the engineers of the various companies had to solve in various ways to keep pace with public demand.

Automobile Radio

Prior to the introduction of the automobile radio the common tube for reception was of the three, four or five element type employing in most cases indirectly heated cathode drawing 1.75 amperes at 2.5 volts AC. In the first automobile sets attempts were made to use these tubes but the filament drain was much too high for the car battery. The designers found that the tube elements could not stand the physical shocks encountered in service and in addition were not of sufficient sensitivity at the voltages available to permit the construction of small medium priced car radios. It is interesting to note that, as you may remember, the first car radios employed six or eight of these tubes, used batteries for plate supply and were of such size and bulk that they had to be mounted on the running board or under the floor.

In an effort to cope with the problem tube engineers developed a new series of tubes with indirectly heated cathodes rated 6.3 volts at .3 amperes AC or DC. The voltage was not critical and could vary throughout the normal terminal voltage variation of the storage battery. All of these new tubes employed indirectly heated cathodes because it was found that cathodes of the filament type could not stand the road shock. In addition the tube elements were braced within the bulb so that they were not subject to vibration independent of that of the envelope. The first of this series of tubes the '36, '37, '38 were a very definite improvement and solved the filament current problem but still did not meet the high degree of effeciency and sensitivity demanded of car radio tubes.

Because of the limited space available in the cars antennas were limited in size. Permanent contact with the ground was impossible so that both of these factors, very essential to permanent installation, combined to create a demand for a much more sensitive receiver under six tubes than any available. The maximum number of tubes was placed at six because of the fact that six tubes at .3 amperes plus the current for the dial light made a drain of 2 amperes. The high voltage was secured either by motor driven generators or by a transformer vibrator rectifier system drawing about 4 amperes. This made the total battery drain six amperes a high discharge rate over a period of time.

Improvement In A.C. Tube Design

About this time definite improvements had been made in the tubes used for permanent AC set installations with the development of the '50 series type tubes operating at 2.5 volts and drawing 1 ampere an improvement over the 1.75 of the older tube types. Perhaps the greatest improvement was in the characteristics of the tubes in this series. They had much higher amplification factors and the '58 was designed especially for use in automatic volume control circuits. This automatic volume control feature is found in practically all modern sets and eliminates much of the fading featured in all of the older radios. Sets using this series of tubes were very popular up till last season.

Strangely enough the next development in car tubes, the '70 series had operating characteristics slightly different from their companion AC set tubes in the '50 series. With the development of this group the midget and transformerless sets began to appear. Manufacturers found that using a number of the 6.3 volt tubes in series with a suitable resistor the filament side of the transformer could be eliminated. The high voltage side was eliminated by the recently developed 25Z5 voltage doubler and rectifier tube. In full wave rectification the DC output voltage of the filter is approximately one half the AC imput voltage. With this tube the 110 volt AC line voltage could be converted to approximately 110 volts DC. The advantage being that these small sets using a low plate voltage were sufficiently sensitive that they had a large market at the low prices made possible by design economies. Sets of this type sold as a rule from $10 up.

Duo-Structure Tubes

Tube engineers conceived the idea of using a common heater and of having two separate sets of elements within the same envelope. This eliminated current for one cathode and the space occupied by the extra tube envelope. The first of these tubes combined a diode detector with a triode first audio section, the '55 tube designed for 2.5 volt AC operation. A companion tube, the '85, was designed for 6.3 volt automobile sets. As this tube necessitated the use of an audio transformer because of its low amplification factor a similar tube was designed 2A6, '75 having an amplification factor of 100 as compared with 8.3 for the '55, '85. The '75 was an immediate success and practically all of the car radios built in the last 3 years have this tube as a detector and first audio.

In sets of the superhetrodyne type at the first detector it is necessary to mix the incoming audio signal with the local frequency to produce an intermediate frequency for further amplification. Previously this had required two tubes, one to act as a mixer and the other to generate the local frequency. Tube engineers were able to design one tube to perform the task of the two, the pentagrid converter 2A7, 6A7. The 2A7 or the 6A7 its companion 6.3 volt DC tube are found in most of the small superhetrodyne sets.

The latest tubes with glass envelopes were announced over a year ago. These tubes the 6D6, 6C6 have characteristics exactly similar to the '58, '57 of the '50 series, designed much earlier but have 6.3 volt AC, DC filament ratings. The 6B7 another of the duo structure tubes combined a diode detector and a pentode in the one envelope. The pentode may be used either as an audio or RF amplifier. The new sets which appeared last year used these tubes for the first time and they were found both in automotive sets and those designed for home use.

It has long been evident to tube designers and manufacturers that if all of the tubes had 6.3 volt filaments much of the duplication previously necessary would be eliminated. These tubes could be used on either AC or DC lines and special tubes for the 2.5 volt filaments would no longer be necessary. In the new all metal tubes this factor has been recognized and the tubes are built for the one voltage only.

New Radio Tubes

Interest in the design of pentode audio amplifiers to replace the triodes such as the 112-A and the '45 was aroused with the introduction of the automobile sets. Of these the '38 was the first attempt designed for the automobile sets it appeared with the '36, '37 series. When the '70 series of tubes were announced the '89 and '41 formed part of that series. The '41 was an immediate success and has been the most widely used output tube for automobile sets in the last three years. AC pentodes were also designed having greater power outputs than those for automotive use. The first of these the '47 was used almost universally until the design of the 2A5 two years ago. Of the pentodes for transformerless sets the '43 was the most popular. The 25 volt filament of this tube aided in the series arrangement necessary in these sets.

With the success of the pentodes designers found that with modification of characteristics tubes of similar construction could be used in Class B amplification. This class of amplification had long been sought because of its high economy yielding more power per dollar of investment in equipment. The '46 was one of the big class B tube sucesses. Since two tubes had to be used the two elements were soon enclosed in the same envelope and the tube, the '53, was soon followed by a 6.3 Volt DC tube of somewhat similar design, the '79. These tubes found greater application in the growing public address field rather than in standard receivers.

Probably the most interesting development in recent years was that of the General Electric Co. in the all metal tubes which they recently announced. As has been advertised the tubes have a metal envelope instead of the glass one previously used on receiving tubes. Strangely enough the tubes used for broadcasting have for a number of years been metal covered but the difficulties of manufacture have kept it from being used on the smaller tubes.

The question naturally comes up why metal tubes, with the ever increasing popularity of multi-wave band radios, there has been a need for better tubes to operate on the higher frequencies. Glass tubes with their shields have long been a source of noisy reception. The metal envelope of the all metal tubes acts as a shield and is effectively grounded to eliminate this noise. The lower internal capacity of the new tubes further reduces the

(*Continued on page twenty-one*)

Results of McMullen Scholarships

By S. C. Hollister

Director of the School of Civil Engineering

Professor Hollister

Who is largely responsible for the creation of the new scholarships.

—Courtesy of Alumni News

Last April the inauguration of the John McMullen Regional Scholarships was announced through these columns. The purpose of these scholarships was to make possible some financial assistance to fifteen high school students from various parts of the country selected for their exceptional ability, who desired to obtain an engineering education at Cornell University.

High School students residing in the State of New York have had available to them a number of scholarships applicable not only to Engineering, but to the entire University. Students from high schools outside the State, however, have had very limited opportunities for obtaining scholarships to assist them in obtaining a college training.

The Regional Scholarship plan divides the country outside the limits of New York into fifteen regions. It was contemplated that from each of these regions applications would be received and finally one student would be selected for the award. This student would receive $200 each year for four years, provided, of course, he maintained the anticipated level of scholarship.

Two hundred and two applications were received by the Dean of the College of Engineering. These applications were separated by districts after which they were reviewed with regard to entrance qualifications and as to scholastic record and endorsements by high school authorities. In each district the five highest ranking students who had the proper entrance qualifications were selected.

In each district a committee of engineering alumni was organized for the purpose of assisting the Dean of the College of Engineering in his selection of outstanding students through the medium of a personal interview with the five highest candidates, either by the committee or by an alumnus from the committee selected for the purpose. It was felt that through this procedure an accurate and practical gage of the candidate's personality could be obtained to aid the Dean in making his selection of truly outstanding material.

Two regions comprising together the States of California and Nevada did not yield candidates who could qualify for admission. To fill these vacancies thus created, candidates from regions 5 and 7 were appointed. The full list of the winning applicants is as follows:

Thomas Isaac Slack Boak, Jr., M.E.
235 Hartford Turnpike, Hamden, Conn.

Douglas Blackburn, M.E.
Park Ridge, N. J.

Robert Mason Reindollar, Jr., C.E.
3510 Forest Park Ave., Baltimore, Md.

Merrill Raymond Dungan, E.E.
Box 1647, Orlando, Fla., 509 N. Cayuga St., Ithaca

Robert Mann, M.E.
7300 Brighton Rd., Ben Avon, Pa.

Robert Beebe Roe, E.E.
Gulf Farms, Elyria, Ohio

John D. June, M.E.
1603 Longfellow Ave., Detroit, Mich.

Herbert F. Hilmer, C.E.
3205 West 8th St., Cincinnati, O.

William John Fleming, C.E.
212 Oak Park Ave., Oak Park, Ill.

William Hamilton Scott, A.E. (C.E.)
6604 N. 24th St., Omaha, Neb.

Gene L. Hintgen, C.E.
Mason Apt. 6, Bismark, N. D.

Noah Edwin Dorius, C.E.
139 North Grant, Casper, Wyoming

Ned Follmer Wagner, 2nd., M.E.
1002 Main St., Watsontown, Pa.

Woodward Henry Warrick, E.E.
19390 Canterbury Rd., Detroit, Mich.

William Robert Cornell, E.E.
2800 74th St., S. E., Portland, Oregon.

Dean of Engineering has had able and hearty support in the various committees operating under the following chairmen: Chester T. Reed, M.E. '03, Worcester, Mass.; Thomas F. Crawford, M.E. '05, Philadelphia, Pa.; Creed W. Fulton, M.E. '09, Washington, D. C.; J. D. Willcox, C.E. '07, Birmingham, Ala.; E. C. Batchelar, M.E. '04, Pittsburgh, Pa.; Fritz Krebs, M.E. '12, Cleveland, O.; Matthew Carey, C.E. '15, Detroit, Mich.; F. E. Cardullo, M.E.(E) '01, Cincinnati, O.; Alfred H. Hutchinson, M.E. '10, Chicago, Ill.; Shurly R. Irish, M.E. '19, St. Louis, Mo.; C. S. Whitney, C.E. '15, Milwaukee, Wis.; C. A. Gould, C.E. '07, Denver, Colo.; Sterling Lines, M.E. '98, Los Angeles, Calif.; Carroll R. Harding, C.E. '10, San Francisco, Calif.; Archibald Downey, C.E. '96, Seattle, Wash.

Active and Prospective Research in the College of Engineering

By H. Diederichs

Director of the School of Mechanical Engineering

With the aid mainly of funds from the Westinghouse Bequest, the College has been able to carry on in the past year some active research and to lay plans for other projects during the coming year. A brief summary of this work may be of interest to both students and alumni.

Mechanical

The *Sibley School of Mechanical Engineering* is engaged in the following research projects:

Determination of the Film Coefficients of Heat Transfer from Steam to Water in Condensers. This work has been in charge of Professor E. G. Baender of the University of Oregon.

Investigation of the Effect of Radiation and of other Interferences upon the Accuracy of Wet Bulb Thermometer Indications. This work is being done upon apparatus donated by Mr. W. H. Carrier, and is carried on by Mr. D. Dropkin.

Investigation of Drop vs Film Condensation on Condenser Tubes. This work is supported by the Detroit Edison Company and is in charge of Professor A. C. Davis and Mr. J. O. Jeffrey.

Investigation on the Heat Losses by Radiation, Conduction and Convection from various Radiator Bodies. Graduate Thesis by Mr. K. F. Rubert, under the supervision of Professor W. M. Sawdon.

Development of a new Form of Viscosimeter to determine directly the absolute Viscosity of Fluids of all Kinds. Work in progress, done last year by Mr. K. Kerwin under the supervision of Professors A. C. Davis and G. B. Upton. Work to be continued.

Investigation on the Mechanical Properties of Rubber. This work is about to be begun by Mr. J. Hirschfeld. It will be carried on with the active advice and supervision of Mr. W. C. Geer, expert in rubber manufacture.

Study of the best Shape of Tensile Test Specimen for Photo-elastic Work, by Professors F. G. Switzer and A. C. Davis.

An investigation of the Mechanical Efficiency of a Single Cyclinder variable Compression Engine over the entire Range of Loads and Speeds. Work in progress under Mr. H. N. Fairchild and with the active advice of Professor Davis and Upton.

Study on Long Column Equations. A Comparison based upon Experimental Data. Work done by Mr. J. O. Jeffrey, and about to be published.

Civil

In the *School of Civil Engineering,* work done by Professor Schoder and his assistants has resulted in Bulletin No. 20 of the Engineering Experiment Station, entitled "Long vs Short Body Fittings for Water Supply." This Bulletin is about to be published.

The research work still in progress or in prospect in this school comprises the following projects:

Study of Pipe Line Flow (supported by the Towl Fellowship).

Study on the Absolute Viscosity of Water and Other Fluids. This is part of the work on pipe lime flow and will be done in cooperation with the Dept. of Physics.

Investigation on the Fatigue of Plain Concrete in Flexure. This work is being done by Professor Schofield and Mr. Vanderlip. It covers a series of aggregates and is nearing completion.

Study on the Durability of Cement of various Composition against Weathering. This also is being carried on by Professor Schofield and is nearing completion.

Study of Seepage Flow under Earth Embankments by Hydraulic-Electric Analogy Method. Graduate Thesis by Lt. R. C. Brown.

Investigation of Stresses in the Stiffening Members of a Roller Gate by Photo-Elastic Methods. Graduate Thesis by Lt. S. M. Wray.

Investigation of Stresses in Roof Truss Gusset Plates by Photo-elastic Methods. Graduate Thesis by Lawrence Burrows.

Investigation of Stresses in Welded Connections which transfer Moments by Shear, by Photo-elastic Methods. Graduate Thesis in progress by A. V. Peterson.

Investigation on the Buckling Characteristics of Slender Columns carrying also Transverse Loads. By H. V. Hawkins.

For the coming year it is intended in cooperation with the School of Mechanical Engineering to build a small wind tunnel which will be used for work in connection with the courses in aeronautics in the latter school, and by the School of Civil Engineering for the solution of problems relating to wind forces in buildings of various forms.

Electrical

The *School of Electrical Engineering* reports the following research work in progress.

A Study on the Magnetic Qualities of Iron, by Professor L. A. Burkmyer.

Measurement of the Field Strength of Antennae, by Professors W. C. Ballard and T. McLean.

Studies in Heavisides Operational Analysis, by Professor M. Malti.

R. O. T. C. Summer Camps

ORDNANCE

This Summer, the Ordnance Camp at the U. S. Army Proving Ground, Aberdeen, Md., saw quite a few of the familiar faces of Cornell Engineers, together with Engineers, from M.I.T., Michigan, University of Cincinnati, and Lehigh. For once in their lives, the engineers really felt at home, for practically all the time they were clothed in blue denim fatigue clothes, which reminded one very much of prison garb. However, everyone had an interesting time with the camp work, and there was never a dull moment in the routine. Some of the more interesting phases included test firing on all sizes and classes of weapons from the caliber .30 rifle and machine gun up to the 16 inch railway mount. Rifle and automatic pistol practice took up several weeks ,and it is a reflection on the Cornell Training that our Engineers and Chemists acquitted themselves so well. A trip by Army wagons to Fort Hoyle and Edgewood Arsenal, with a visit through the Chemical Warfare School, was enjoyed by all except those who whiffed a bit too much of chlorine or tear gas. Flights in the Army bombing planes, thrilling rides in tanks of all descriptions, anti-aircraft work, loading of shells, and numerous other phases of the work might be mentioned if space permitted. Incidentally, Capt. Merle H. Davis of Cornell was responsible for the excellent meals served us at Camp.

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FIELD ARTILLERY

The 1935 Field Artillery camp began June 20, at Madison Barracks, N. Y., and consisted of a Cornell Battery of 65 men and a Princeton Battery of 80 men. The first three weeks were given over to extensive training and a thorough review of the fundamentals of drill, gunnery, fire control, and R.S.O.P. An interesting added feature was instruction in the use of gas masks. The work with the B. C. telescope, aiming circle, range finder, and telephones was especially adapted to the engineers, whose training had already acquainted them with the operation of similar instruments.

After three weeks the students were transferred to Pine Camp, N. Y., in a huge convoy of army trucks and private cars. There the field work began in earnest, as the large Government range made it possible to do actual firing with the familiar French 75s supplemented by the lighter 37mm gun. For the first time this year the traditional horse-drawn caissons were not used, as the 7th and 25th F.A., with whom we worked, are now completely motorized. The training at Pine Camp was climaxed by a two day problem, the maneuvers simulating actual war conditions.

It should not be thought that the camp did not have its lighter moments, as evidenced by several entertaining dances at the Barracks, together with numerous private expeditions into Watertown and even more distant points such as Ithaca and New York.

INFANTRY

The Infantry R. O. T. C. Camp was held this year, as usual, at Plattsburgh Barracks on Lake Champlain. It's a beautiful spot but we didn't have very much time to enjoy it. The officers in charge started us off at such a fast pace that we began to wonder if we were going to get time to sleep. After a week or so we got more or less used to the army routine and had a little time to pause and liook over our surroundings. Most of the first four weeks were spent on the rifle and pistol ranges with a little instruction in the use of howitzer weapons and machine guns stuck in on odd afternoons. The Cornell bunch won a barrel of nice creamy ale from the Syracuse boys by beating them in rifle markmanship but they turned the tables on us when it came to the pistol and we had to pay up in the same way. Both parties were much enjoyed by the combined group down back of the rifle range.

Our one big disappointment is that we failed to bring home the "Best Company Flag." The Cornell-Syracuse company started off by taking the lead in the competition the first day but by the end of the second week or so the Rutgers-N. Y. U. company had crept up behind us and snatched the flag. From then until the end it was a close race. When the day of reckoning came we still had a chance to win the flag by winning the Close Order competition by a fair size margin. We won the competition but the margin was not quite large enough to give us the flag. You never saw a more sad bunch of guys as those from Syracuse and Cornell nor a happier bunch than those from Rutgers and N. Y. U.

When the time came to go home to a more easy life we were glad to go but we really must admit that we had a good time and learned a lot.

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SIGNAL CORPS

The summer camp for the advanced course in the R. O. T. C. Signal Corps was held at Camp Dix, N. J., from June 18 to August 25. Besides the Cornell unit the units at Massachusetts Institute of Technology, and Carnegie Institute of Technology, and the University of Michigan were represented.

Work for the first two weeks consisted mostly of elementary wire communication and pistol practice and record firing. In the morning while one platoon studied the servicing and the use of field telephone equipment the other platoon pursued the course in dismounted pistol firing. In spite of the fact that a 45 calibre Colt automatic held at arms length sounds like a young cannon, several of the fellows managed to make expert scores. The Cornell cadets to earn this distinction were Ralph E. Fash '37, John D. Serrell Jr. '37, H. Haskell Westcott '36 E.E., and Lawrence M. Wood '36 M.E.

(*Continued on page twenty-four*)

THE CORNELL ENGINEER

PUBLISHED MONTHLY DURING THE COLLEGE YEAR

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❖ EDITORIALS ❖

"FRESHMAN ISSUE"

It has been a time honored custom at this season of the year for the various campus publications to devote the leading editorial to words of welcome and encouragement to the supposedly green and helpless Freshmen. This year we find ourselves in a particularly sympathetic mood with the class of '39, as the Cornell Engineer is also a freshman emerging on the campus for the first time. Our fears of "busting out" are somewhat lessened, though, when we recall the fact that our parent magazines, The Sibley Journal of Engineering and The Cornell Civil Engineer resided at Cornell for fifty and forty-three years respectively.

By way of enlightenment to you newcomers it might be well to explain that the aforementioned two magazines were merged last spring to form the new Cornell Engineer. The reasons for this combination were two-fold. First, there are the material advantages ensuing to the magazine of better editorial material, increased circulation, and more advertising. Second, and more fundamentally important, it was the logical result of the consolidation of the three engineering colleges at Cornell into one College of Engineering. It was with this idea of "in unity there is strength" that those who were responsible for the merger worked for its accomplishment. And it is with this same idea that we hope the Cornell Engineer will become a medium of cooperation and contact between the three schools and thus materially assist in the progress and advancement of the college.

This year's freshman class can do their part in helping this advancement by remembering that while Cornell has always held the highest rank as an engineering school, it was the records of its graduates that built up that reputation, and it will be your records as future graduates that will perpetuate it.

EXPERIENCE: A VITAL NECESSITY

In medical school, students dissect cadavers, deliver babies, operate on dogs, watch expert surgeons at work. Law students study actual cases, attend court sessions, participate in mock trials. Before even Hotel men receive their degree, they must do their share of bell-hopping and dishwashing to gain practical experience.

Only in the field of engineering does it seem impossible to acquire that balance between theory and practice which is so necessary for turning out men who are engineers, and not children in wonderland. Students who have had even the slightest technical experience are regarded in most engineering colleges as rarities.

Despite this, the theoretical side of engineering is expanding so greatly that the practical side has been simply forced into the background. No one can possibly deny the importance of theory; but not until a fellow has had experience, can he really appreciate the substance of what he is studing. He has no self-reliance; he can't discriminate between important and unimportant details; he is afraid to exercise his own judgement. "What do *you* want, sir?" is the question which is repeatedly asked of the professor. "Shall I space these rafters sixteen inches or eighteen inches?"

In view of all this, is it surprising that most engineering concerns take it for granted that the work of newly graduated students is a total loss to them for six or eight months? Or, that graduates are continually turning to their books to re-study things they considered unimportant in school?

Some attempt has been made to overcome this difficutly: civil engineers have summer camp, machanical engineers have foundry and shop practice, electrical engineers put on their annual show. At rare intervals field trips are conducted through plants and jobs of educational

vaiue to the student, much work in designing is given, and many actual projects are studied in class. But in the light of future application, all this is relatively insignificant. Nothing gives a truer sense of values than really working on honest-to-goodness engineering jobs.

Curriculums are already so crowded that it is impossible to include more practical work during the school year. The only answer to the problem, then, is to have students engage in work pertaining to their profession during summer months. During the past few years engineering has picked up to such an extent, that most, if not all of the students should be able to obtain some sort of a job. The monetary return may not and need not be great, but the experience obtained would be invaluable. It may not be possible for the faculty to require these jobs as a requisite for graduation, but the school should make every attempt to provide them, and to interest the student in obtaining them.

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ENGINEERS AND SALESMEN

During the summer, we had the opportunity of talking with the head of the personnel department of a large corporation; and in the course of the conversation, we were rather forcibly brought to a realization of the importance of several things to which we had previously given but little thought. We had always taken it more or less for granted that when we graduated we would eventually get a job in which we would do little but apply the technical knowledge that we had been acquiring. However, it was firmly impressed upon us that the probability of our being able to do so was very small; and that if we continued to hold such a position as our goal, we would most likely be due for a disappointment. It was pointed out to us that by far the greater portion of the jobs available to engineering graduates are not of a strictly technical naure, but are more along the line of selling things; and that if we wished to be reasonably sure of a job when we graduate, we might just as well start to develop those attributes which are essential to a good salesman.

There are, of course, a great many to whom such advice is superfluous. They are just endowed by nature with those characteristics which make them salesmen. But there are others to whom the idea of selling is more or less distasteful, who have no natural bent for selling. There are no doubt some of them among the freshmen entering this year; and it is to them particularly that this is directed. Much as they might like to, they will probably not be able to spend their lives over a drawing board, or looking through a transit. Since such is the case, they will do well to remember that they will eventually have to sell something, even though it is only selling themselves to a prospective employer.

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MC MULLEN SCHOLARSHIPS

The McMullen Regional Scholarships which are awarded this year for the first time fill a long felt need in the College of Engineering here at Cornell University. That is, an equal opportunity for those deserving students and prospective students outside of New York state to obtain aid through scholarship awards to this school. They not only make it possible for these prospective students from the more distant parts of the United States to study at an institution which would normally be outside of their prospective range, but they also give the rest of the undergraduates the opportunity to make contacts with a highly selected body of students from all parts of the nation.

While it is nothing new for strangers to come here as students we do feel that here is one group which are not exactly strangers. It is thus with a feeling of welcome such as that accorded a distant relation who is returning home after a long absence that we greet them. In another year they will return bringing still more of their kind with them, until in the fourth year there will be a total of sixty prospective engineers on our campus representing the cream of the country.

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SUMMER WORK

As we return to school in the fall and exchange tales of summer experiences, we find that while many of the students relaxed, the majority spent the summer working. Since these two experiences are direct opposites, there is a good deal of discussion questioning the benefits of this summer work.

If the undebateable necessary employment cases are set aside, the principle factor presented against work is that the relaxation prepares one to get more out of school during the coming year.

Since there are two general classes of work, there are two answers to this argument. First, there is the case of the student who is working in his chosen field, and then the one who isn't. The former, in exercising his recently acquired knowledge, runs up against so many bumps that he comes back thirsty to clear certain points up and follow new leads. The latter, though he doesn't receive the same shock impetus, does have one thing in common with the student working in his own field. He again has had called to his mind the necessity of an education and the minuteness of the purchasing power of a hard earned dollar. In short, he realizes how rough the world is. Doesn't this first hand authentic knowledge more than over balance the doubtful good of recreation?

Another advantage the working student gains, which is possibly even more valuable than either of the preceding, is an insight into the workingman's point of view and mode of living.

The average college graduate hopes to direct men beneath him. Since one of the first necessities of leadership is for the leader to be able to anticipate his followers reactions. It is easily seen that the leader must well know and understand his men.

After college, the first chance at leadership comes in handling workingmen. From the position of leader the graduated student cannot start to "learn" his men. He must know them already. A workingman will not accept a "white collar man" as he does a student shoulder to shoulder, and so it is here that the experience gained through summer work allows a leader to lead his men.

CORNELL SOCIETY of ENGINEERS

CLARENCE H. DAVIDSON '11, PRESIDENT

EDWARD C. M. STAHL '13, VICE PRESIDENT — FRANK O. ELLENWOOD, VICE PRESIDENT

T. S. CHADEAYNE '26, RECORDING SECRETARY — JOHN P. SYME '26, SECRETARY AND TREASURER

"The objects of this Society are to promote the Welfare of the College of Engineering at Cornell University, its graduates and former students and to establish a closer relationship between the college and the alumni."

President's Column

September 12, 1935

Fellow Members:

The April issues of the two undergraduate Engineering publications announced their amalgamation under the general auspices of your Society. The new publication, retaining its undergraduate management and functions, also becomes the official organ of The Cornell Society of Engineers, and we intend cooperating with the Undergraduate Board toward making this magazine more vitally interesting to you. This page will be devoted to the affairs of the Society and Engineering Alumni, and we hope will furnish a forum for the expression of opinion which no University publication has provided in the past.

This first number will go out to a paid subscription list more than double that of the two original magazines. Membership subscriptions are still coming in, and we need your cooperation to continue growing. We believe that the larger membership and subscription list will result in an improved magazine which will be worth the money. And further, we do not believe that it can be considered an altogether unprofitable duty to participate, through our Society, in efforts to promote the welfare of our Alma Mater.

We Cornell Engineers have no end of things which we think should be improved, but until now we have had no convenient channel for communication. We have had a number of round-table discussions at meetings in New York which have developed some valuable ideas. This page will, in the future, be open to expressions from members, and we hope you will take advantage of it. This brings to mind a letter I received a couple of months ago from a member in Pittsburgh. It was a very constructive criticism to the effect that the out-of-New York members have, in the past, received very little benefit from the Society, and that local chapters of the Cornell Society of Engineers should be established in large centers other than New York. I can say in support of the New Yorkers that this condition was recognized a long time ago, and some efforts were made to rectify it, but the absence of such a medium as this publication provides made the project fail. We have appointed a Committee with John H. Lawrence '09 as Chairman to investigate and plan a method whereby the activities of the Society may be participated in to the greatest extent by members in other cities. We shall appreciate receiving suggestions from any of you on this subject. Speaking with a background of nearly twenty-four years active association with this Society, I may say that it is well worth while—for the sake of future Cornell Engineers—your son and your friends' sons and the continued reputation of the college from which you graduated.

Let me, now, summarize our immediate plans and objectives, and solicit your suggestions and active support, to the end that Cornell Engineers may better cooperate for the improvement of their college and for their own pleasure and benefit.

First—Increase the membership of the Society and the circulation of The Cornell Engineer.

Second—Form local chapters of the Society in centers other than New York.

Third—Provide support for the Employment Agencies for Cornellians in Ithaca and New York and eventually, to some extent, in other centers.

Fourth—Provide, through increase in the size and influence of our coordinated group, means whereby the needs and projects of the Engineering College at Cornell may receive necessary publicity and support.

Finally—I should again call your attention to the fact that under the present arrangement, the membership dues of the Society now include a subscription to The Cornell Engineer. The dues are less than the former subscription price of either of the old magazines. You might mention this to your friends.

Very sincerely,

C. H. DAVIDSON, *President*

P. S. Communications should be addressed to The Cornell Society of Engineers, % Cornell Club, 245 Madison Avenue, New York City.

ALUMNI NOTES

To the alumni:

It is our earnest desire to give you the best section of alumni notes in every issue that it is possible to give. However, the section cannot write itself; neither does much news from the alumni drift in through mere hearsay. To produce a good alumni section requires the complete cooperation of the alumni and the editors. We are willing to do our part if you will do yours. We believe that a good section of alumni news is a primary requisite for any publication of this type. But we cannot have a good section unless you, the individual alumnus, will take a few seconds of your time every now and then and drop us a few lines telling us the things which you think that your friends who read the ENGINEER *would be interested in knowing. It does not necessarily have to be recent news. Some of your classmates who have temporarily lost track of you would without doubt be interested to know just where you are and what you are doing, even though you have been doing it for the last fifteen years... So what do you say? Let's hear from you.*

JOBS FOR CORNELL ENGINEERS—

The co-operation of all Cornell Engineers is needed to increase the scope of the placement work that is being done at Ithaca, at the Cornell Club in New York and in other Cornell centers. This work has been under way for over two years and the results so far have been eminently successful. Interest and active assistance of alumni will not only help many of them, both employers and employees, but also will bring benefits to the University.

The first step in placement work is the receiving from an employer a request for applicants to fill a job, specifications of which are given in detail—the second step is the selecting by the Bureau of competent candidates from its list of active registrants—the last step is the bringing together of the employer and the prospective employee. From this point it is up to the candidate.

It is necessary, therefore, that the placement offices secure openings and have men to propose to fill them. Cornell engineers can assist in recommending the Employment Offices to employers who are looking for men and in suggesting registration to alumni who are out of work or desirous of changing their occupations or associations. There always have been men not engaged in the work they are best qualified to do. The depression has greatly increased their number. The Bureaus can be of great help to them.

Obviously there will be openings for which no candidates are found and registrants for whom no jobs can be suggested immediately. However, more jobs and more registrants will materially help this situation. At the present time there are a number of good jobs for experienced men going begging for lack of qualified registrants.

The University Placement Bureau at Ithaca is under the direction of Herbert H. Williams '26. The Cornell Club Employment Service at 245 Madison Avenue, New York City, is under the direction of P. O. Reyneau, '13. Both offices are open to all Cornellians. The two offices are in constant touch with each other. In general the New York office handles the New York Metropolitan District, while the Ithaca office handles everything outside this district. Cornell engineers are invited to come to either office to discuss their problems in confidence and with assurance of interest. Every Cornellian satisfactorily employed is a happier individual and an asset to the University.

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ALUMNI NOTES

Cornell may well be proud of having Charles R. Richards '99 MEE. as one of its members. Richards as a president of Lehigh University for the past thirteen years has done as much, if not more than, any person to advance that school to a well founded position as an institution of learning. Since this installation the student body has increased half again in number, the plant and equipment of the school has been doubled, and the available funds of the school have been doubled, according to the statement of the press. It is indeed unfortunate that Mr. Richards has been forced to resign due to ill health.

The report has come in that another CE of Cornell has been found in the corps of the Safe Harbor Water Power Corp. Howard E. Whitney '22 is a construction engineer in charge of the construction work of a Hydro-electric plant on the Susquehanna river. His address at present is RD 2, Lancaster, Pa. If these reports keep coming in at the present rate it will not take long to have an all Cornell staff in the corporation.

Although rather late, we take pleasure in announcing that another grad has bitten the dust, or rather succumbed to the wiles of women. Leslie Ferguson '27 ME of Paterson, N. J., and Carolyn Jones of Montclair, N. J., were married on May 7, 1935. As an item of interest on the same lines we wish to report that Fred Schroeder '34 of Norwood, N. J., CE, and Elizabeth Davis of Nyack, N. Y., were married at Nyack on September 7, 1935.

Harry S. Brown '04 has been elected President of Foster-Wheeler Corp New York. Mr. Brown has been with the Company since 1919, when he resigned from Power Specialty Co. to accept vice-presidency of Wheeler Condenser & Engineering Co. When the two companies

combined in 1927 he became Vice President in charge of Sales and a Director.

John H. Vohr, '16, formerly assistant superintendent of a continuous strip mill of the Inland Steel Co., Chicago, has been appointed superintendent of the continuous hot wide strip mill of the Youngstown Sheet & Tube Co. Mr. Vohr has been assisting in the installation of the new strip mill. Early in his career he was identified with the American Sheet & Tin Plate Co. as master mechanic at Farrell, Pa. After 12 years he was transferred to the company's Gary plant where he became assistant superintendent of the strip mill. Some years later he went with the Inland Steel Co.

Gordon S. Sloughter '33 EE, has been transferred to the New York office of the International Business Machine Company of Binghamton, N. Y. After the floods of a few weeks ago in these regions the daily drizzles of the Empire City will not even cause a moment's worry.

The graduates of this University have turned to many trades and have served in many capacities. We of the Engineering. Schools have in our alumni, undertakers, candymakers, dressmakers (pardon—designers), and some that actually remain in the engineering field; but Prof. H. N. Ogden '89 best known for his humorous lectures in "Sewers" has topped them all. Mr. Ogden has been found on the Board of Trustees of Wells College, not as a figure but as an active member. A certain member of the Board of this magazine, recognized by his preference for "Planters Punches," has been heard asking if "beer jacket" needed a personal secretary.

Norman B. Livermore '95 CE is a director of the Pacific Gas and Electric Company. If there are any of the readers who might need a means of livelihood it might be a good idea to renew acquaintances or, if this is not possible, to make an acquaintance.

Lucius S. Hulburd, CE '03, is superintendent of the Mid-Hudson Highway Bridge at Poughkeepsie, N. Y. His office is at 103 Union Street, Poughkeepsie.

Frank S. Hopkins CE '10, is a consulting civil engineer with his office at 20 Cannon Street, Poughkeepsie, N. Y. He lives at 75 Market Street.

John O. Fuchs, ME '11, is an engineer with the Central Hudson Gas and Electric Company, at Poughkeepsie, N. Y. His home address is 2 State Street, Poughkeepsie.

Linn D. Shipman, CE '12, is with the Electrolux Company. His address is 192 Windsor Avenue, Rockville Center, Long Island.

Tristan Antell, CE '13, is a banker with the Grayson M. P. Murphy Company, at 52 Broadway, New York City.

Hobart V. Cornwell, ME '13, is a consulting heating and ventilating engineer. He is a member of the firm of the Engineering Supervision Company, which is located at 250 Park Avenue, New York City.

W. Howard Zabriskie, '13 ME, is assistant personnel director of the Socony-Vacuum Company, at 26 Broadway, New York City. He lives at 170 Wellington Road, Garden City, Long Island.

George L. Nickerson, '13 CE, is supervising engineer for the New York State Department of Public Works, at Poughkeepsie, N. Y. His home address is 43 South Randolph Avenue.

Sterling W. Mudge, '13 ME, is city treasurer of Glen Cove, Long Island. He is also city sales manager for the Socony-Vacuum Company. He lives at The Place, Glen Cove.

Jacob Koopman, '13 CE, is chief draftsman for the Standard Oil Company of New Jersey. He has a son who is a senior in civil engineering at Cornell this year.

Paul A. H. Weiss, ME '16, is an engineer with the Central Hudson Gas and Electric Company, at Poughkeepsie. He lives at 75 Market Street.

Ernest R. Acker, ME '17, is president of the Central Hudson Gas and Electric Company. His home address is Springside, Poughkeepsie, N. Y.

John S. Lusch, CE '26, has just completed a trip to California and back through the Panama Canal. He is the head of the science department of Great Neck High School, Great Neck, Long Island. He lives at 8750 111th Street, Richmond Hill, N. Y.

John P. Draney, '34 CE, is assistant city engineer for the City of Poughkeepsie. He lives at 43 Innis Avenue.

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OBITUARY

"Suicide at sea" is the last report of George Hanson '08 CE of Cornell.

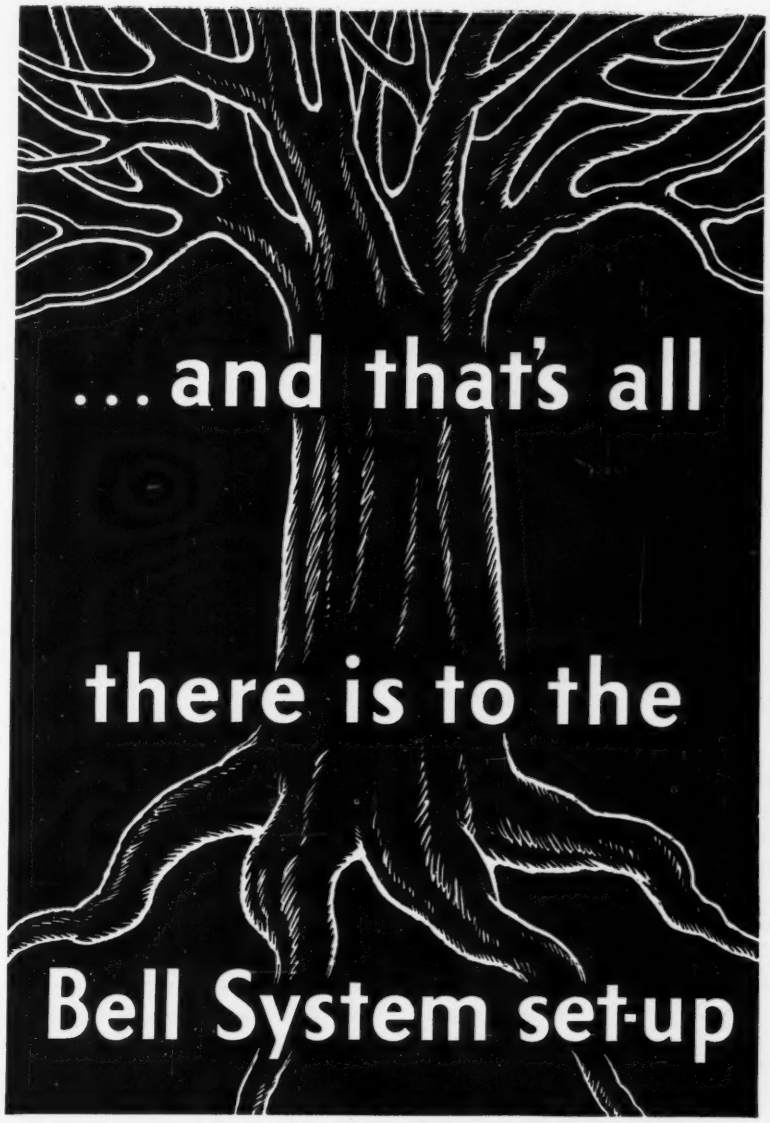
As a final report this is a truth as Mr. Hanson shot himself aboard the *President Polk* of the *Dollar Line* while returning from his last post at Salonica, Greece, where he served as consul, to the United States for treatment after suffering a nervous collapse. Mr. Hanson, the trouble shooter of the Diplomatic Corps of the United States for the past two decades, has been followed by a veritable plague of bad luck from the time he left Harbin, Manchukuo, where he rendered distinguished service as Consul General during the trying days of the Sino-Japanese disturbance.

Transferred to Moscow when the United States resumed diplomatic relations with the Soviet Government, Mr. Hanson had high hopes of increasing trade between the two countries. He came home on a vacation this year, and while here the United States consulate in Moscow was closed.

Mr. Hanson was then assigned to Addis-Ababa to handle matters in that sector. He sailed for his post but was recalled when the State Department decided that due to the Italo-Ethiopian affair Mr. Engert, veteran of the Near East Foreign Service, could better handle the situation.

Mr. Hanson was sent to Salonica, where he suffered a collapse from a nervous disorder.

He was born at Bridgeport, Conn., Oct. 11, 1883, was graduated from the School of Civil Engineering in 1908 and began his foreign service career as a student interpreter in 1909 at the Consulate General in Shanghai, China.



THOUGH large, the Bell System is simple in structure. You can think of it as a tree.

Branches: 24 associated operating companies, each of them attuned to the area it serves.

Trunk: The American Telephone and Telegraph Company, which coordinates all system activities.

Roots: Bell Telephone Laboratories and Western Electric, whose functions are scientific research and manufacture; Long Lines Department of A. T. and T., which through its country-wide network of wires links together the 24 operating companies, handles overseas service; Advisory Staff of A. T. and T., which advises the operating companies on all phases of telephone operation and searches constantly for better methods.

Working as one, these many Bell System units enable you to talk to almost anyone, anywhere, any time.

Why not call your folks tonight? For lowest rates, call by number after 7 P. M.

BELL TELEPHONE SYSTEM

COLLEGE

EDITOR'S NOTE: *By way of introducing the freshmen to the various societies and other organizations within the College of Engineering, we are publishing on this page a list of the different engineering groups together with their emblems, officers, and a short description of each. Throughout the year we will endeavor to furnish our readers with up-to-date information concerning all Engineering College activities.*

TAU BETA PI

A National Honorary Scholastic Fraternity in Engineering. This is the goal of all engineering students and the Tau Beta Pi key is a coveted honor, as a symbol of highest achievement.

The officers for 1935-1936 are: President, D. C. Amsler; Vice-President, Harold D. North; Secretary, Alexander C. Wall.

CHI EPSILON

A National Honorary Scholastic Fraternity in Civil Engineering. Invitation to membership is based on both personality and activity as well as scholastic attainment.

The officers for 1935-1936 are: President, John F. McManus; Vice-President, Arthur Glasser; Secretary-Treasurer, Alfred Crew, III; Corresponding Secretary, Joseph C. Delibert.

ETA KAPPA NU

A National Honorary Scholastic Fraternity in Electrical Engineering. Interest in Electrical Engineering as shown through achievement in activities and studies is a factor in selecting members.

The officers for 1935-1936 are: President, Llewellyn W. Collings, Jr.; Vice-President, Morton P. Matthew; Recording-Secretary, Daniel D. Moretti; Corresponding Secretary, Emanuel J. Shapiro.

KAPPA TAU CHI

A National Honorary Scholastic Fraternity in Administrative Engineering. The Cornell Chapter, recently installed, has the same ideals as the other honorary Engineering Fraternities.

A. S. C. E.

The Cornell Student chapter of the American Society of Civil Engineers. Its purpose is to acquaint the students with the aims and ideals of the Civil Engineering profession.

The officers for 1935 1936 are: President, Arthur F. Gla ser; Vice-President, H. E. Bovay, Jr.; Secretary, H. H. Sturdy; Treasurer, T. T. Kan.

A. S. M. E.

The Cornell Student chapter of the American Society of Mechanical Engineers. Its aims and purposes are the same as those of the A. S. C. E.

The officers for 1935-1936 are: President, D. C. Amsler; Vice-President, H. Baldw'n; Secretary-Treasurer, J. Hirshfeld; Honorary Chairman, Prof. F. O. Ellenwood.

A. I. E. E.

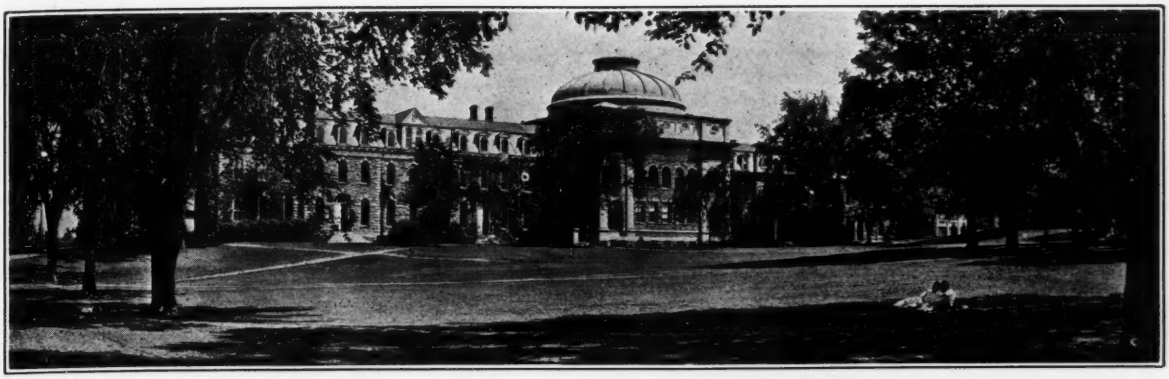
The Cornell Student chapter of the American Institute of Electrical Engineers, with aims similar to those of the A. S. C. E. and the A. S. M. E.

The officers for 1935-1936 are: Chairman, E. P. Ellis; Vice-Chairman, Hyman Fein; Secretary-Treasurer, Robert C. Winans.

ROD AND BOB

Honorary society in civil engineering. Its purpose is to promote good fellowship among civil engineers.

Officers for 1935-1936 are: President, Howard H. Sturdy; Secretary, Paul W. Van Nest; Treasurer, Andrew W. McElwee.



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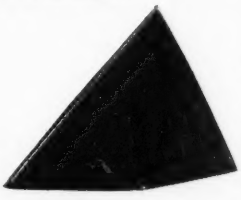

Honorary society in civil engineering. The purpose is similar to that of Rod and Bob.

Officers for 1935-1936 are: President, Alan B. Mills, Jr.; Secretary - Treasurer, A. F. Glasser.

* * *

ATMOS

Honorary society in Mechanical Engineering. Its purpose is to promote good fellowship among Mechanical Engineers. The officers for 1935-36 are William D. Sells, President; Frederick D. Hart, Vice President; and James F. Hirshfield, Secretary-Treasurer.

* * *

DELTA CLUB

Honorary society in Electrical Engineering. Its purpose is to promote conviviality among Electrical Engineers. This year's officers of the club have not yet been announced, but will be published in an early issue.

* * *

PI TAU PI SIGMA

During the summer months the Cornell Chapter of Pi Tau Pi Sigma, national honorary in Signal Corps, continued active in the sense that its work carried on. In conjunction with the R. O. T. C. Signal Corps units at M.I.T. and Cornell it sponsored the filming of a complete motion picture record of the summer camp at Camp Dix, N. J. The official photographers of this history were Lieutenant Larew of the Cornell Unit and Lieutenant Bicher of the M.I.T. Unit. In the finished form the film will be between 600 and 800 feet after the titling and editing has been done.

It is expected that the copy of the film belonging to the Cornell Unit will be ready for showing at an early fall meeting of the society. Members of the society who attended the summer camp were H. H. Westcott '36 E.E.; H. T. Critchlow Jr. '36 M.E.; and D. G. Graves '36 A.E.

* * *

C.E. REPORTS 100% EMPLOYMENT

According to results obtained from a recent questionnaire sent out by Professor Hollister to the members of the Class of '35 C.E., the men of that class are 100 per cent employed. This should be a highly encouraging indication to the present undergraduates that the end of the depression in engineering unemployment is at hand.

* * *

BOARD MEETING IN NEW YORK

Shortly after the close of school in June, the publication board of the Cornell Engineer met with the officers of the Cornell Society of Engineers to discuss the problems arising from the merger of the Sibley Journal and the Cornell Civil Engineer and plans for the new magazine. The meeting was held at the Cornell Club of New York and was followed by an informal luncheon.

* * *

COMPETITION TO OPEN

The Cornell Engineer will open a competition for Sophomores in good standing in the College of Engineering early in October, the date to be announced shortly after school opens. This competition will lead to positions on the business and editorial boards and carries as compensation valuable experience and contact with fellow engineers as well as University credit. At the same time there will be an unusual opportunity for members of the Junior class to become associated with the new magazine as men of the Class of '37 are needed to fill vacancies made by the recent merger.

* * *

INTEGRAPH GIVEN UNIVERSITY

Mr. H. C. Ford of the Ford Instrument Co. recently offered the University an integraph worth over $200,000 and of invaluable aid to research work going on at Cornell.

Dr. A. R. Mann, Provost of the University, accepted the offer and appointed the following members of the

University faculty to discuss their needs with Mr. Ford. Professors Boothroyd of Astronomy, Gilespie of Mathematics, Hollister of Civil Engineering, Hurwitz and Hutchinson of Mathematics, Kennard of Physics, Kirkwood of Chemistry, Malti of Electrical Engineering and Pierson of Statistics.

These gentlemen have had one meeting with Mr. Ford during the month of June and they will form a steering committee to discuss the technical problems which the integraph will solve.

There are two other instrumen.s of this kind in the country and Mr. Ford promises to make his gift to Cornell the last word in integraphs.

We of the CORNELL ENGINEER Board extend our sincere gratitude to Mr. Ford for his timely and appropriate gift and to the Provost of the University for his excellent choice of committee.

* * *

FACULTY NOTES

It is with great regret that we announce the retirement of Professor M. A. Pond from the Faculty of the School of Civil Engineering. His was indeed a familiar and loved figure to the hundreds of Cornell students who have passed through his classes in descriptive geometry.

Professor J. R. Bangs, Personnel Director of the College of Engineering, will be absent from the University on sabbatical leave for the coming year.

* * *

VOLUME NUMBER EXPLAINED

To avoid confusion for future historians, we will explain here that while this issue is captioned Volume I, Number 1, it is actually a continuation of The Cornell Civil Engineer, Volume XLIV, and the Sibley Journal of Engineering, Volume XLIX. The Sibley Journal was founded in 1885 and the Civil Engineer in 1892.

* * *

FLOOD DAMAGES UNIVERSITY

The grounds of the University suffered slight damage from the recent flood because of their advantageous position above the city and between the two glens. Beebe Lake dam and the Hydraulic Lab were the only properties to be seriously damaged by the angry water. Rapid repair work on the crest of the dam has made it safe and the repair job on the Lab is nearing completion.

* * *

C.E. JUNIORS AT CAMP

The Civil Engineering Surveying camp is being held as usual this summer on Cayuta Lake near Odessa, N. Y. At this writing the camp is nearing its close and the bearded boys from Lincoln Hall are feverishly preparing their maps. Upon visiting the camp last week your Editor was assured by the special correspondent of the Engineer that the annual article on the camp would be ready for publication in the November issue. From some of the stories we heard while there, it should be a good one if not too strictly censored.

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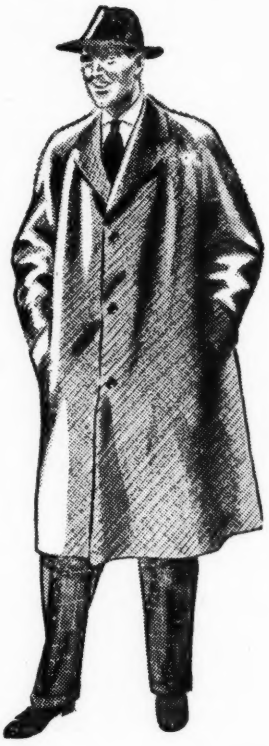

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STRESS and STRAIN

Old readers of the CORNELL CIVIL ENGINEER will recognize in this column the successor to Transit and Tape. Now, as in the past, we welcome suitable contributions from students, faculty, and alumni. Contrary to popular opinion, a $5 check will not be given for each item published. This offer (and the column) expires intermittently without notice.

Freshmen this year are fortunate in that they can witness one of the greatest engineering feats of the decade taking place right here on the campus. The far-flung system of the Ithaca Railway, long the pride of Tompkins County, is now in the process of destruction, with masses of uprooted and twisted rails giving mute evidence of the glory that once was Ithaca. Thousands of alphabetical workers have been mobilized for the task, and it is confidentially expected that the next few years should see it well toward completion. It is with a sigh of real regret, though that we look back on those square wheeled cars, the original Toonerville Trolleys, and realize that never again will we see them clattering up the hill and down again, off the track and on again.

* * *

We have learned that the usual business let-down between graduation and summer school did not materialize in Ithaca this year due to a sudden epidemic of conventions which made the local burghers forget all about the alumni reunion. It is rumored that the Dutch was especially hard hit by the plague. All of which reminds us that Nat Willis was a delegate pro tem at the Young G. O. P. conclave in Alexandria Bay last summer. The newspapers failed to carry a full account of his activities, however. We had no idea the censors were so strict.

It is rumored that the army is considering selling their mowers in favor of a more steady and dependable means of cutting grass. One Col. Critchlow is said to be responsible for the rumor as a result of his activity on fatigue detail while at Camp Dix Signal Corps.

* * *

C. C. (Push-push) Simpson, C.E. '36 ran into a baffling dilemna while at the Field Artillery Camp this summer. Having drawn the unenviable job of Battery Commander on Sunday, he summarily ordered Jack Patten to assume his duties while he went to town to keep a date with Donna Wanna Pudie Yonna. Patten however was also headed for town to call on his friend "Slant Eyes", and claimed he had permission from Captain Bullock. Simp was last seen in a brown study trying to decide whether he, as student captain for the day, ranked Captain Bullock.

* * *

Prior to the last informal initiation of the Delta Club Treman Lake had been partially drained, leaving an exceedingly muddy stretch of shore line. According to the Engineers star representative the mud was so heavy that several of the delegated had to be towed home. Recent rains put several others under the weather.

* * *

The inhabitants of Odessa and the country surrounding the C.E. Camp are reported digging cyclone cellars, but not due to the recent flood scare, as might be assumed. No, the new menace is Art Glasser, the demon chauffuer of the camp truck. When his trusty transport car is heard coming roaring down the narrow dirt roads, all vehicles promptly seek the comparitive safety of the ditch, while frightened mothers hastily call in their children from the danger zone.

THE SMORGASBORD

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R. O. T. C. SUMMER CAMPS

(*Continued from page nine*)

During the next two weeks the work was divided between radio practice on S.C.R. 131 and S.C.R. 171 sets, and practice in the installation and operation of simplexed, phantom, and phantom-simplexed telephone and telegraph circuits. All of this was just preparation for the tactical problems and exercises which were to be held during the last two weeks of camp. Pole climbing, wire laying, and pole line construction were also included in the course at this point.

The first problem was a practice one which gave us our first opportunity to combine all of our communication facilities and coordinate them. This was done on a small scale for convenience. The final problem was a full scale tactical maneuver which took three days.

Not all of our time was spent in work, however. Nearly every afternoon there was a swimming formation to go to Browns Mills for a refreshing swim in the lake. In the evening there was a soft ball league between M.I.T., C.I.T., and Cornell. Although Cornell had the smallest squad the boys gave a very good account of themselves by winning every scheduled game except the last one which was canceled.

Other interesting features of the program were inspection trips to the Signal Corps School and Laboratories at Fort Mammouth, N. J., the trans-atlantic broadcasting station of the American Telephone and Telegraph at Lawrenceville, N. J., and the encampment of the 51st Signal Battalion at the Camp Dix aviation field.

Those attending the camp from Cornell University were: W .G. Calahan '37 Hotel; H. T. Critchlow Jr. '36 M.E.; John Davidson III '37 A.E.; R. A. Evans '37 M.E.; R. E. Fash '37 A.E.; D. C. Graves '36 A.E.. C. H. Leet '36 E.E.; J. G. Nutt '37 M.E.; W. V. Rettger '36 M.E.; J. J. Serrell Jr. '37 M.E.; P. H. Stafford '36 M.E.; H. H. Westcott '36 E.E.; and L. M. Wood '36.

MODERN DESIGN TRENDS IN RADIO RECEIVERS

(*Continued from page five*)

losses on the higher frequencies. Perhaps more important to the consumer, the new tubes are more economical to manufacture and promise to have longer life due to sturdier construction than their glass companions. The new sockets for the tubes eliminate that groping around in the dark so annoying when making tube replacements. It is necessary only to put the center pin in and rotate the tube until the prongs fit into their proper holes. The internal elements of the tubes operate at lower temperatures because of the better heat radiation through the metal. Through new uniform design of characteristics the sets employing these new tubes have better tone quality than sets employing the older tubes.

Cathode Ray For Tuning

An entirely new type of tube was announced during the summer months, the 6E5. Basically it is a cathode ray tube in minature with a small built in triode amplification section. The tube was designed as a visual aid to the operator in tuning his set. When the station is fully tuned in the top of the bulb, called the eye, indicates it visually by displaying a narrow beam of light extending from one edge to the center. Any station that is not tuned in is indicated by illumination of one-quarter of the circular top of the tube. The tube is normally mounted horizontal so as to make the indicating portion visible to the operator.

What the future developments will bring cannot be definitely forecast. We may be sure, however, that at some future date a multi-wave band receiver combined with new television developments will be available to the general public. Promising developments in the field of wired radio indicate that it also may be available. With a system of wired radio, programs would be sent via wire to the home and could be selected with comparatively simple apparatus for reproduction. Economy and freedom from static and other noise effects would be the most important advantages to be gained by such a system.

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